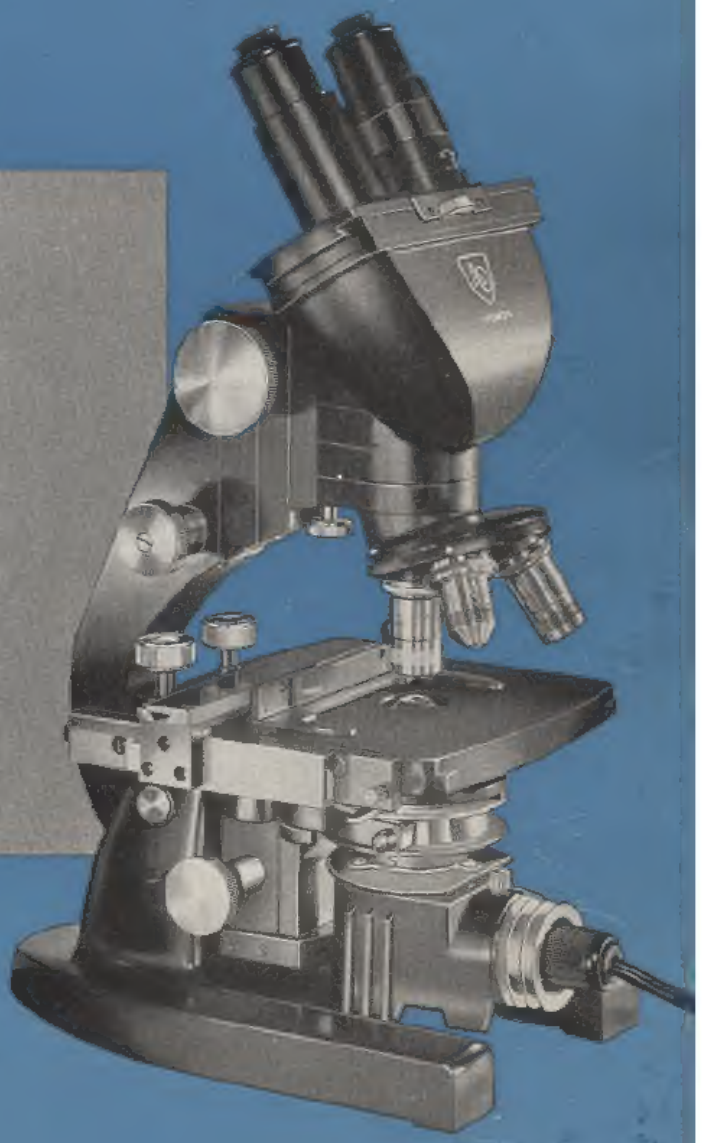
Introducing **COMPLETELY NEW**

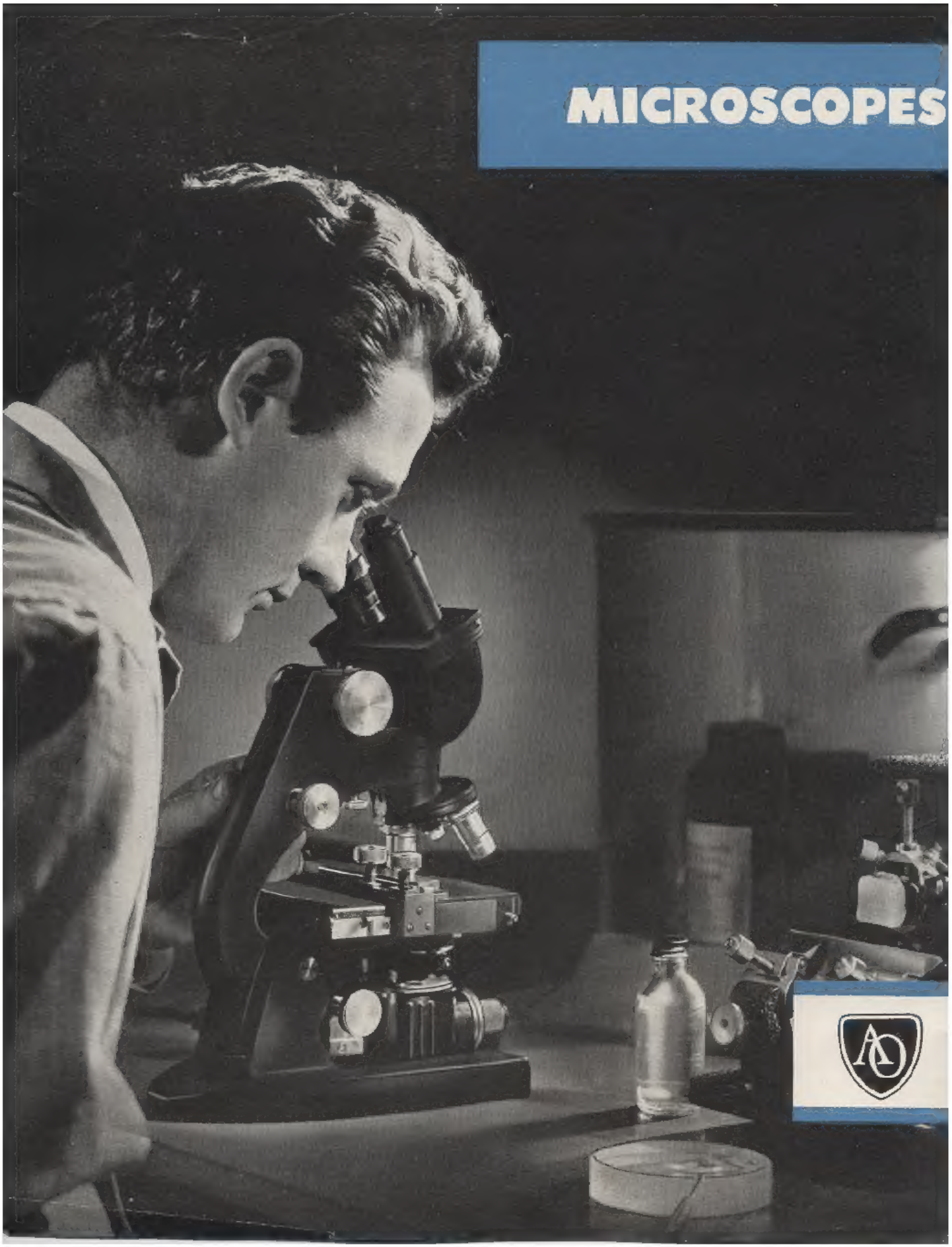
SPENCER MICROSCOPES

Series 15-35-65-75

SPENCER
LABORATORY MICROSCOPES



MICROSCOPES



FOR THE *MODERN* LABORATORY

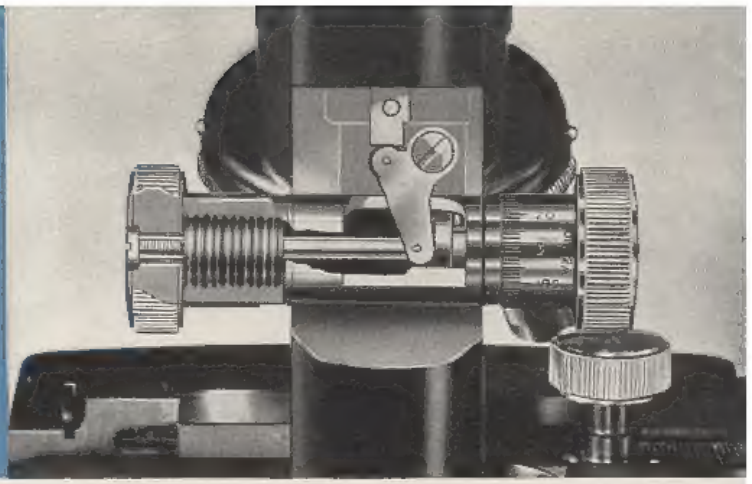
There's over a Century's Experience behind
SPENCER LABORATORY MICROSCOPES

All the knowledge and experience of over a hundred years has gone into developing the latest Spencer Laboratory Microscopes. For students, technicians, laboratory and research workers, they offer the latest in design and convenience. Spencer Microscopes are world-famous. They incorporate time-tested features, in addition to many new refinements. All of these new microscopes have been subjected to exhaustive tests on pilot models—many, for over five years prior to their introduction. Aluminum, used in construction of the arm and body, reduces weight by 1/3—a definite boon to those who must carry microscopes from one place to another. The microscope stands have been tested and found to be stronger than and twice as rigid as previous models. The inclination joint, after two million reciprocating motions, has shown no measurable wear. The redesigned micrometer-screw fine adjustment now has ball-bearing slideways. It is responsive to the lightest touch. Under test it showed less than .2 micron backlash after three million revolutions—an estimated normal 20 years' wear. The latest Spencer Laboratory Microscopes are ready to serve you and to carry on the tradition established by earlier models—dependability, long wear, customer satisfaction.

An Important Instrument—
THE LABORATORY MICROSCOPE

Most problems can be solved if they can be clearly seen and understood. Since the unaided human eye has limitations, microscopes are of vital importance in extending the range of vision to extremely fine details. They are used extensively in school and hospital laboratories for study and examination of biological and bacteriological specimens and tissue sections. In industry they are employed in observing the condition of raw and processed materials, the quality of finished products, the effects of use and wear, and in analyses by optical methods. Minute particles or scratches may be counted and measured with eyepiece reticules, microscope fields of view calibrated for specific counting requirements, precision manufacturing operations observed. Industry needs and uses the laboratory microscope to cut production costs and to maintain quality. The microscope is indispensable to public health laboratories in maintaining health standards.

Here is a Spencer N15MLH Microscope in use in a laboratory. Notice how the compact substage light source leaves the table top free for necessary experimental materials. Note also the convenient size and position of the various focusing control knobs. The microtome at the extreme right is a Spencer 820 Precision Rotary Microtome which feeds specimens as thin as 1 micron.



ADJUSTABLE TENSION ON FOCUSING CONTROL KNOBS

Tension on the substage and coarse adjustment control knobs may be set to suit the individual touch. With left-hand knob held firmly, a counterclockwise turn of the opposing knob loosens tension; clockwise turn tightens, even to acting as a lock. This adjustment can also be used to compensate for normal wear that may occur over a period of years.

MICROMETER-SCREW TYPE FINE ADJUSTMENT

Ball-bearing slideways reduce friction, facilitate focusing. Increased bearing surface of micrometer screw, with several threads always fully engaged, decreases wear. Spring loading eliminates backlash and reduces possibility of breaking cover glasses. Constant ratio lever insures accuracy of 2 micron scale through entire range of travel.

Many Advanced Features of

IMPROVED LOCATION OF FINE ADJUSTMENT CONTROLS

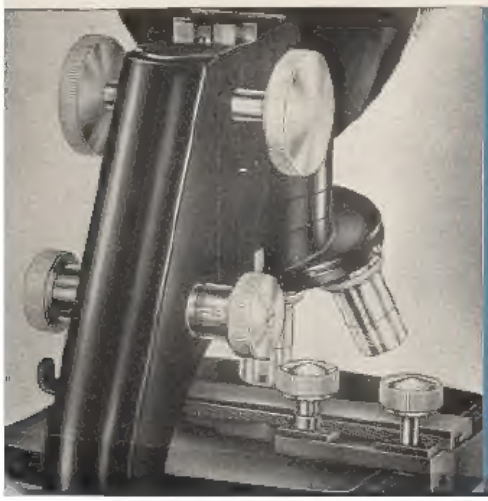
Dual control knobs, located low enough on the arm to be convenient to mechanical stage and substage controls, permit use of either hand in making adjustments. Sufficiently separated from the coarse adjustment knobs for ample finger clearance, they also facilitate reading of the scale, calibrated in divisions of 2 microns, on the right-hand knob.

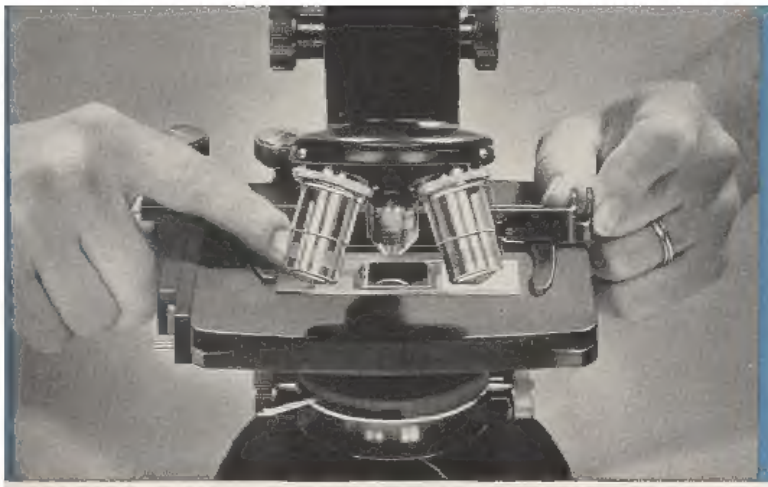
POSITIVE CENTERING OF OBJECTIVES

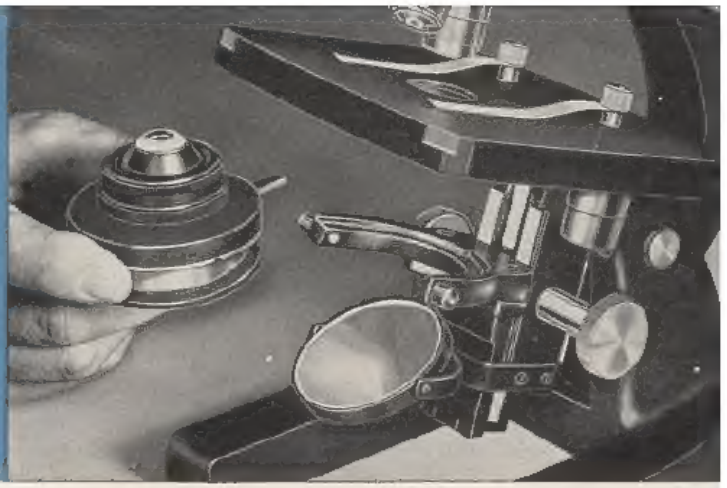
A sturdy ball-and-groove spring stop on the dustproof, dust-shedding nosepiece accurately and positively centers all objectives. Spencer patented dual-cone construction doubles the bearing surface, lengthens the life and stability of the nosepiece, and assures parfocality and correct alignment of objectives with other elements of the optical system.

NEW 10X DIVISIBLE OBJECTIVE WITH N.A. OF .25

A completely redesigned objective providing a clear, crisp image from edge to edge of field, with improved color correction and working distance increased to 6.8mm. Tapered end allows better oblique top lighting of specimen. This objective is divisible to provide 4.2X magnification with an N.A. of .10, and a working distance of 25mm.







NEW MECHANICAL STAGE WITH "PINCH GRIP" ACTION

Patented "Pinch grip" action of slide holder permits rapid insertion of slides without danger of disturbing mechanical stage settings. New built-on mechanical stage is available, either graduated for recording and relocating of selected fields in the specimen, or ungraduated. Control buttons are conveniently located, adjacent to other microscope adjustments.

IMPROVED OPTICAL ALIGNMENT OF SUBSTAGE

New and larger fork-type mount facilitates easy removal of condenser for cleaning. Locking and keying devices in fork and condenser mounts prevent rotation of condenser and assure positive positioning for correct optical alignment, no matter how often it is removed. Dual rack-and-pinion adjustment knobs are convenient to both hands.

SPENCER MICROSCOPES

DURABLE, LONG-WEARING INCLINATION JOINT

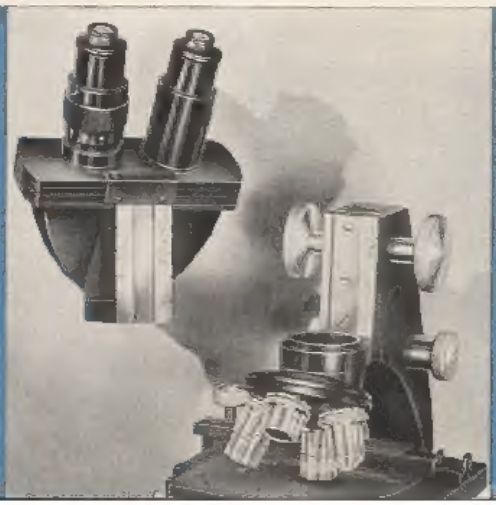
This patented axle showed no measurable wear after two million reciprocating motions. Bearings automatically compensate for wear and uniform friction is maintained throughout the arc of movement. Friction is adjustable by turning small screws in base pillars. Removal of a stop screw in the right pillar allows the microscope to incline to horizontal.

RAPID INTERCHANGEABILITY OF BODY TUBES

Interchangeability of body tubes permits users to convert from monocular body to binocular body and vice versa. It is easily and conveniently accomplished. This interchangeability is desirable for those who are interested in both photomicrography and prolonged microscopical examinations. This feature is available on the microscopes of series 15 only.

CONVENIENTLY ATTACHABLE SUBSTAGE ILLUMINATOR

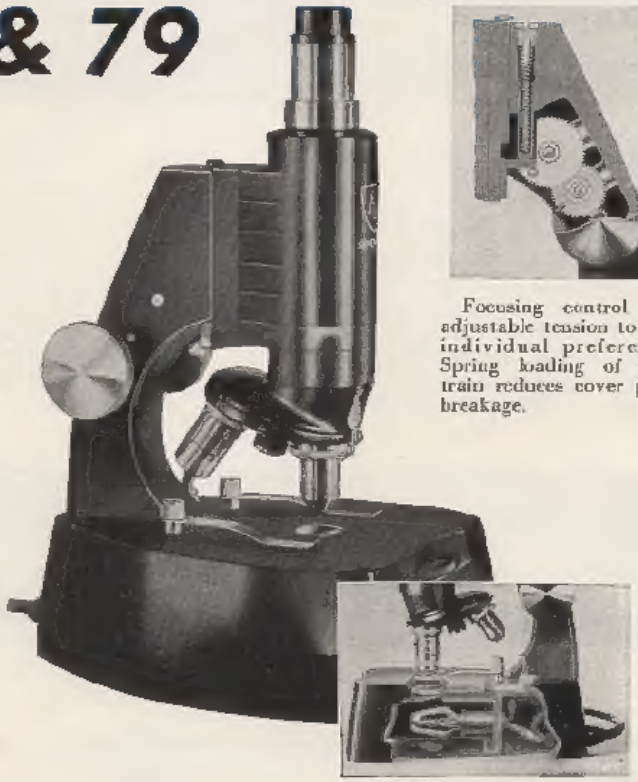
Convenient, permanently adjusted full-field illumination is provided for all objectives from low power "finder" to oil immersion, without refocusing condenser. Securely fastened to the condenser with bayonet fitting, Microscope Illuminator No. 700 eliminates adjusting mirror or lamp. It remains in optical alignment when the microscope is inclined.



Cat. No

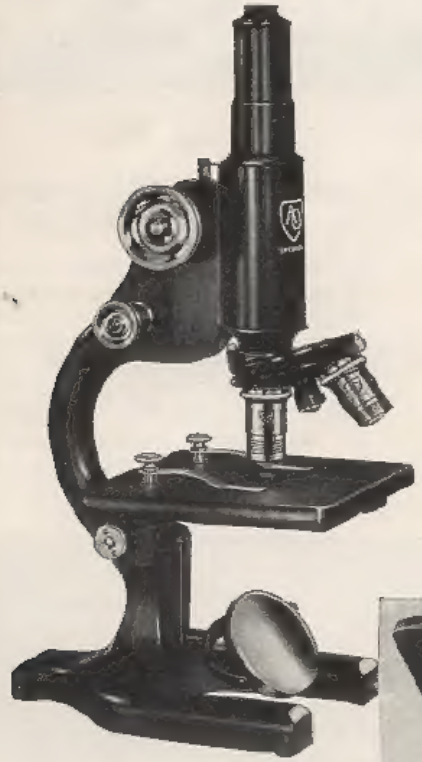
Series 78 & 79

For simple, routine examinations where condenser and oil immersion objectives are unnecessary, Nos. 78 and 79 Microscopes, equipped with standard Spencer optics, enable the technician or student to work rapidly and comfortably. The built-in light source provides dependable, unvarying illumination through 5-aperture disc diaphragm. The combination coarse-fine adjustment facilitates rapid focusing. Reversed arm and nosepiece, together with low position of focusing knobs, give clear view of stage and allow forearms to rest on table. Without cabinet.



Focusing control has adjustable tension to suit individual preference. Spring loading of gear train reduces cover glass breakage.

Positioned close to the specimen, the 7-watt bulb provides a wide angle of cool illumination for better optical performance.



Series 66

The No. 66 Microscopes are suitable for simple, routine examinations, especially where electrical outlets are unavailable, since it utilizes an outside light source which is focused on the specimen by means of a mirror. Used in the conventional position, it has the standard Spencer rack-and-pinion coarse and micrometer-screw type fine adjustments and a five-aperture disc diaphragm, shown in insert. Cabinet included.

78A
78B
78BA
78BB
79A
79B
79BA
79BB
79DA
66B
66D
66BA
66BB

SCHOOL AND INDUSTRIAL LABORATORIES

Body Tube	Nosepiece	Achromatic Objec. Initial Magnif'n.	Huygenian Eyepieces	Stage	Diaphragm	Substage Equipment	Price
Monocular	Single	10X separable to 4.2X, locked-in	10X Built-in	Plain with clips locked on	Revolving Disc	Built-in 7 w bulb	$ 61.50
Monocular	Double	10X and 43X locked-in	10X Built-in	Plain with clips locked on	Revolving Disc	Built-in 7 w bulb	99.50
Monocular	Triple	5X, 10X, 43X locked-in	10X Built-in	Plain with clips locked on	Revolving Disc	Built-in 7 w bulb	120.50
Monocular	Triple	3.5X, 10X, 43X locked-in	10X Built-in	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	120.50
Monocular	Single	10X separable to 4.2X	10X	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	63.00
Monocular	Double	10X and 43X	10X	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	101.00
Monocular	Triple	5X, 10X, 43X	10X	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	122.00
Monocular	Triple	3.5X, 10X, 43X	10X	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	122.00
Monocular	Triple	5X, 10X, 43X	5X and 10X	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	127.50
Monocular	Double	10X and 43X	10X	Plain 110mm x 115mm	Revolving Disc	Concave Mirror	136.50
Monocular	Double	10X and 43X	5X and 10X	Plain 110mm x 115mm	Revolving Disc	Concave Mirror	142.00
Monocular	Triple	5X, 10X, 43X	10X	Plain 110mm x 115mm	Revolving Disc	Concave Mirror	157.50
Monocular	Triple	3.5X, 10X, 43X	10X	Plain 110mm x 115mm	Revolving Disc	Concave Mirror	157.50

1678 Cabinet for Series 78-79 ..... $ 9.00
378 Replacement Bulb for Series 78-79, 7-watt, 115—125-volt .....MCP $ .12
377 Replacement Bulb for Series 78-79, 10-watt, 130-volt .....MCP $ .25
Cabinets supplied with Series 66 Microscopes. If not desired, deduct..... $12.00

FOR SCHOOL AND INDUSTRIAL LABORATORIES

Cat. No.	Body Tube	Nosepiece	Achromatic Objec. Initial Magnif'n.	Huygenian Eyepieces	Stage	Diaphragm	Substage Equipment	Pri
78A	Monocular	Single	10X separable to 4.2X, locked-in	10X Built-in	Plain with clips locked on	Revolving Disc	Built-in 7 w bulb	$ 61.
78B	Monocular	Double	10X and 43X locked-in	10X Built-in	Plain with clips locked on	Revolving Disc	Built-in 7 w bulb	99.
78BA	Monocular	Triple	5X, 10X, 43X locked-in	10X Built-in	Plain with clips locked on	Revolving Disc	Built-in 7 w bulb	120.
78BB	Monocular	Triple	3.5X, 10X, 43X locked-in	10X Built-in	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	120.
79A	Monocular	Single	10X separable to 4.2X	10X	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	63.
79B	Monocular	Double	10X and 43X	10X	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	101.
79BA	Monocular	Triple	5X, 10X, 43X	10X	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	122.
79BB	Monocular	Triple	3.5X, 10X, 43X	10X	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	122.
79DA	Monocular	Triple	5X, 10X, 43X	5X and 10X	Plain with clips locked on	Revolving Disc	Built-in 7 w Bulb	127.
66B	Monocular	Double	10X and 43X	10X	Plain 110mm x 115mm	Revolving Disc	Concave Mirror	136.
66D	Monocular	Double	10X and 43X	5X and 10X	Plain 110mm x 115mm	Revolving Disc	Concave Mirror	142.
66BA	Monocular	Triple	5X, 10X, 43X	10X	Plain 110mm x 115mm	Revolving Disc	Concave Mirror	157.
66BB	Monocular	Triple	3.5X, 10X, 43X	10X	Plain 110mm x 115mm	Revolving Disc	Concave Mirror	157.

1678 Cabinet for Series 78-79 ..... $ 9.00
378 Replacement Bulb for Series 78-79, 7-watt, 115—125-volt .....MCP $ .12
377 Replacement Bulb for Series 78-79, 10-watt, 130-volt .....MCP $ .25
Cabinets supplied with Series 66 Microscopes. If not desired, deduct..... $12.00

Series 65

The No. 65 Microscopes are especially suitable for school or college laboratories where versatility and flexibility are desired at small cost. Incorporating all the new Spencer mechanical features, they render satisfactory service where neither condenser nor oil immersion objectives are needed. It is, however, possible at some future date to add condensers. This increases their usefulness. They are supplied with either mirror or attached illuminator. Cabinet included.

The flexibility of an Iris Diaphragm permits precise aperture control of light reaching specimen.

Condenser with Iris Diaphragm is focusable in sleeve-type slotted mount. No. 700 Lamp can be attached.

Series 75

Especially valuable where inexperienced students might otherwise fail to secure maximum use of the condenser, the No. 75 Microscopes allow the instructor to lock the condenser in the desired position. The N.A. 0.66 condenser illuminates dry objectives adequately, while the N.A. 1.25 condenser allows the use of oil immersion objectives. All the new Spencer features are incorporated on these microscopes. Cabinet included.

65B
N65B
65D
N65D
65BA
N65BA
65BB
N65BB
75E
N75E
75F
N75F
75EA
N75EA
75EB
N75EB
75H
N75H

SCHOOL AND COLLEGE LABORATORIES

Body Tube	Nosepiece	Achromatic Objec. Initial Magnif'n.	Huygenian Eyepieces	Stage	Diaphragm	Substage Equipment	Price
Monocular	Double	10X and 43X	10X	Plain 125mm Square	None Iris only	Plano-concave Mirror	**$167.50**
Monocular	Double	10X and 43X	10X	Plain 125mm Square	None Iris only	Attached 700 Illuminator	**171.50**
Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	None Iris only	Plano-concave Mirror	**173.00**
Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	None Iris only	Attached 700 Illuminator	**177.00**
Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	None Iris only	Plano-concave Mirror	**188.50**
Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	None Iris only	Attached 700 Illuminator	**192.50**
Monocular	Triple	3.5X, 10X, 43X	10X	Plain 125mm Square	None Iris only	Plano-concave Mirror	**188.50**
Monocular	Triple	3.5X, 10X, 43X	10X	Plain 125mm Square	None Iris only	Attached 700 Illuminator	**192.50**
Monocular	Double	10X and 43X	10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	**183.50**
Monocular	Double	10X and 43X	10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	**187.50**
Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	**189.00**
Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	**193.00**
Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	**204.50**
Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	**208.50**
Monocular	Triple	3.5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	**204.50**
Monocular	Triple	3.5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	**208.50**
Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Plano-concave Mirror	**244.00**
Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Attached 700 Illuminator	**248.00**

Cabinets supplied with all microscopes. If not desired, deduct..... **$15.00**

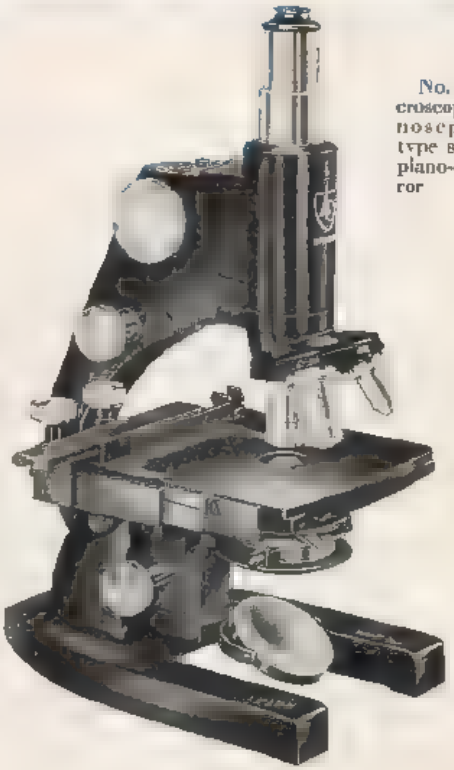
S FOR SCHOOL AND COLLEGE LABORATORIES

Cat. No.	Body Tube	Nosepiece	Initial Magnifn.	Eyepieces	Stage	Diaphragm	Equipment	
65B	Monocular	Double	10X and 43X	10X	Plain 125mm Square	None Iris only	Plano-concave Mirror	$167
N65B	Monocular	Double	10X and 43X	10X	Plain 125mm Square	None Iris only	Attached 700 Illuminator	171.
65D	Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	None Iris only	Plano-concave Mirror	173
N65D	Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	None Iris only	Attached 700 Illuminator	177.
65BA	Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	None Iris only	Plano-concave Mirror	188.
N65BA	Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	None Iris only	Attached 700 Illuminator	192
65BB	Monocular	Triple	3.5X, 10X, 43X	10X	Plain 125mm Square	None Iris only	Plano-concave Mirror	188
N65BB	Monocular	Triple	3.5X, 10X, 43X	10X	Plain 125mm Square	None Iris only	Attached 700 Illuminator	192
75E	Monocular	Double	10X and 43X	10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	183
N75E	Monocular	Double	10X and 43X	10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	187
75F	Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	189
N75F	Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	193
75EA	Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	204
N75EA	Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	208
75EB	Monocular	Triple	3.5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	204
N75EB	Monocular	Triple	3.5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	208
75H	Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Plano-concave Mirror	244
N75H	Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Attached 700 Illuminator	248

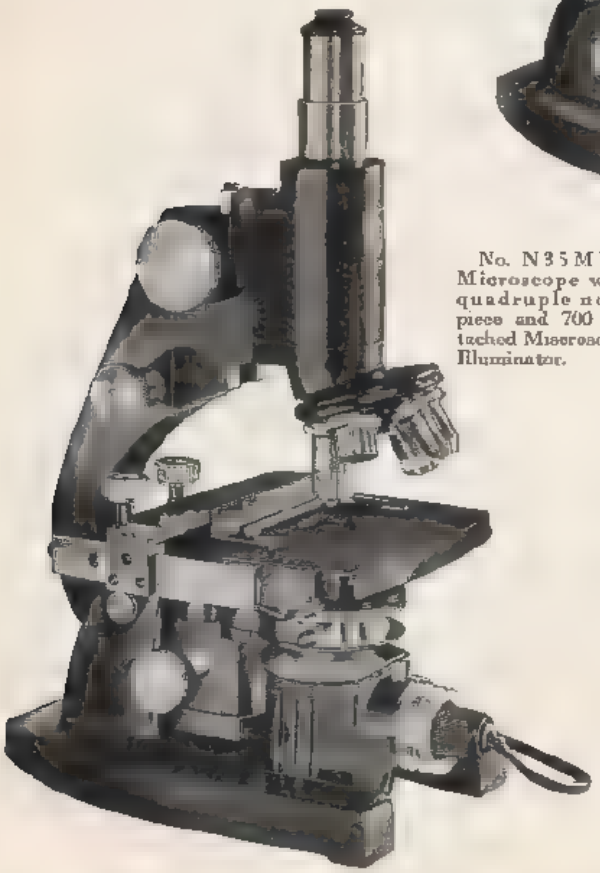
Cabinets supplied with all microscopes. If not desired, deduct..... $15.00

Series 35

For adaptability, convenience, and range of magnification, No. 35 Microscopes are especially recommended for use in medical, industrial, public health, and university laboratories. Rack-and-pinion focusing, fork-mounted condensers are convenient for rapid focusing and removal for cleaning or interchanging. Most models are equipped with mechanical stages and the standard optics required by medical schools. They are supplied with attached illuminators or mirrors for using outside light sources. Cabinet included.



No. 35MH Microscope with triple nosepiece, fork-type substage, and plano-concave mirror



No. N35MHA Microscope with quadruple nosepiece and 700 Attached Microscope Illuminator.

The Abbe N.A. 1.25 Condenser, without special readjustment, provides full-field illumination for objectives from the high power 97X oil immersion to the 5X and 3.5X low power "finder" objectives. It is furnished with all Spencer laboratory microscopes equipped with an achromatic oil immersion objective.

35E
N35E
35F
N35F
35EA
N35EA
35H
N35H
35HA
N35HA
35MH
N35MH
35MHA
N35MHA

BIOLOGICAL AND INDUSTRIAL LABORATORIES

		Achromatic Objec.	Huygenian			Substage	Price	
Monocular	Double	10X and 43X	10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	$197.50	$217.00
Monocular	Double	10X and 43X	10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	202.50	222.00
Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	203.00	226.50
Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	208.00	231.50
Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	218.50	242.50
Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	223.50	247.50
Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Plano-concave Mirror	258.00	290.00
Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Attached 700 Illuminator	263.00	295.00
Monocular	Quadruple	5X, 10X, 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Plano-concave Mirror	279.00	315.50
Monocular	Quadruple	5X, 10X, 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Attached 700 Illuminator	284.00	320.50
Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Plano-concave Mirror	294.00	326.00
Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Attached 700 Illuminator	299.00	331.00
Monocular	Quadruple	5X, 10X, 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Plano-concave Mirror	315.00	351.50
Monocular	Quadruple	5X, 10X, 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Attached 700 Illuminator	320.00	356.50

Add C just before the figures of the catalog number as C15MLH, NC15MLH) to indicate Americoted optics. Prices for uncoated and Americoted models appear in right-hand columns.

Cabinets supplied with all microscopes. If not desired, deduct $15.00. If carrying case is preferred, add $5.00 to prices listed.

S FOR BIOLOGICAL AND INDUSTRIAL LABORATORIES

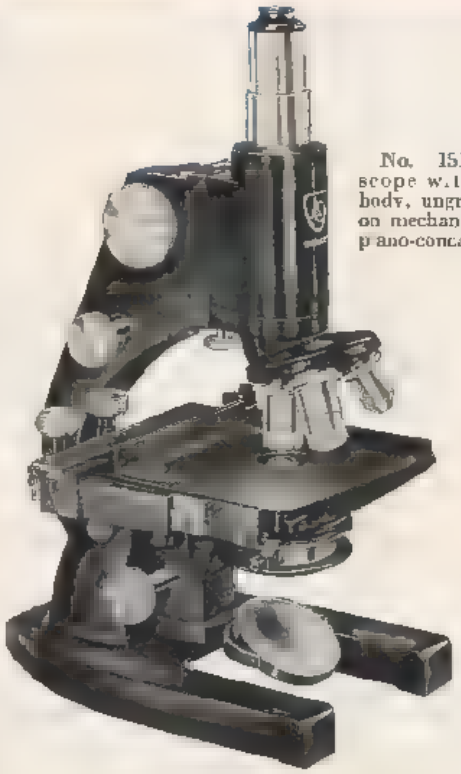
35E	Monocular	Double	10X and 43X	10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	**$197.50**
N35E	Monocular	Double	10X and 43X	10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	**202.50**
35F	Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	**203.00**
N35F	Monocular	Double	10X and 43X	5X and 10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	**208.00**
35EA	Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Plano-concave Mirror	**218.50**
N35EA	Monocular	Triple	5X, 10X, 43X	10X	Plain 125mm Square	N.A. 0.66	Attached 700 Illuminator	**223.50**
35H	Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Plano-concave Mirror	**258.00**
N35H	Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Attached 700 Illuminator	**263.00**
35HA	Monocular	Quadruple	5X, 10X, 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Plano-concave Mirror	**279.00**
N35HA	Monocular	Quadruple	5X, 10X, 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Attached 700 Illuminator	**284.00**
35MH	Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Plano-concave Mirror	**294.00**
N35MH	Monocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Attached 700 Illuminator	**299.00**
35MHA	Monocular	Quadruple	5X, 10X, 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Plano-concave Mirror	**315.00**
N35MHA	Monocular	Quadruple	5X, 10X, 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Attached 700 Illuminator	**320.00**

Add C just before the figures of the catalog number (as C15MLH, NC15MLH) to indicate Amerecoted optics. Prices for uncoated and Amerecoted models appear in right-hand columns.

Cabinets supplied with all microscopes. If not desired, deduct $15.00. If carrying case is preferred, add $5.00 to prices listed.

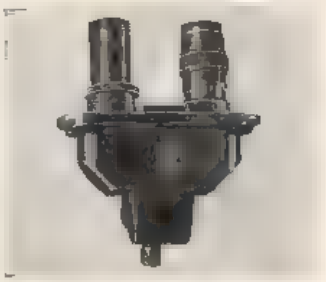
Series 15

For prolonged periods of microscopical examination, No. 15 Microscopes offer the ultimate in comfort and convenience. The binocular body with eyetubes inclined 30° from vertical, allows comfortable posture, reducing muscular fatigue. Eyetubes, converging at the normal angle for close work, reduce eyestrain and are adjustable for interpupillary distance and differences in eye refraction. Monocular models are convertible to binocular at any time. Graduated or ungraduated, built-on or attachable mechanical stages are optional. Cabinet included.



No. 15MAH Microscope with monocular body, ungraduated built-on mechanical stage, and plano-concave mirror

No. N15MLH Microscope with inclined binocular body and No. 700 Microscope Illuminator



Binocular bodies with parallel eyetubes are available for those who prefer them. When ordering give number of equivalent model with inclined eyetubes, but specify *"with parallel tubes"*

15AH
N15AH
15MAH
N15MAH
15LH
N15LH
15MLH
N15MLH
15MLHW
N15MLHW
15QLH
N15QLH

BIOLOGICAL AND BACTERIOLOGICAL LABORATORIES

		Achromatic Objec.	Huygenian			Substage		
Monocular Convertible	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Plano-concave Mirror	$284.00	$316.00
Monocular Convertible	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Attached 700 Illuminator	289.00	321.00
Monocular Convertible	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Plano-concave Mirror	320.00	352.00
Monocular Convertible	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Attached 700 Illuminator	325.00	357.00
Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Plano-concave Mirror	439.00	499.00
Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Attached 700 Illuminator	444.00	504.00
Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Plano-concave Mirror	475.00	535.00
Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Attached 700 Illuminator	480.00	540.00
Inclined Binocular	Triple	10X and 43X 97X oil imm.	10X Wide Field	Built-on Mechanical	N.A. 1.25	Plano-concave Mirror	476.00	528.00
Inclined Binocular	Triple	10X and 43X 97X oil imm.	10X Wide Field	Built-on Mechanical	N.A. 1.25	Attached 700 Illuminator	481.00	533.00
Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built on graduated mechanical	N.A. 1.25	Plano-concave Mirror	489.00	549.00
Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built on graduated mechanical	N.A. 1.25	Attached 700 Illuminator	494.00	554.00

Add C just before the figures of the catalog number (as C15MLH, NC15MLH) to indicate Amerıcoted optics. Prices for uncoated and Amerıcoted models appear in right-hand columns.

Cabinets supplied with all microscopes. If not desired, deduct $15.00. If carrying case is preferred, add $5.00 to prices listed.

ES FOR BIOLOGICAL AND BACTERIOLOGICAL LABORATORIES

Cat. No.	Body Tube	Nosepiece	Achromatic Objec. Initial Magnif'n.	Huygenian Eyepieces	Stage	Condenser	Substage Equipment	Price Uncoated
15AH	Monocular Convertible	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Plano-concave Mirror	$284.00
N15AH	Monocular Convertible	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Attached 700 Illuminator	289.00
15MAH	Monocular Convertible	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Plano-concave Mirror	320.00
N15MAH	Monocular Convertible	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Attached 700 Illuminator	325.00
15LH	Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Plano-concave Mirror	439.00
N15LH	Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Plain 125mm Square	N.A. 1.25	Attached 700 Illuminator	444.00
15MLH	Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Plano-concave Mirror	475.00
N15MLH	Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on Mechanical	N.A. 1.25	Attached 700 Illuminator	480.00
15MLHW	Inclined Binocular	Triple	10X and 43X 97X oil imm.	10X Wide Field	Built-on Mechanical	N.A. 1.25	Plano-concave Mirror	476.00
N15MLHW	Inclined Binocular	Triple	10X and 43X 97X oil imm.	10X Wide Field	Built-on Mechanical	N.A. 1.25	Attached 700 Illuminator	481.00
15QLH	Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on graduated mechanical	N.A. 1.25	Plano-concave Mirror	489.00
N15QLH	Inclined Binocular	Triple	10X and 43X 97X oil imm.	5X and 10X	Built-on graduated mechanical	N.A. 1.25	Attached 700 Illuminator	494.00

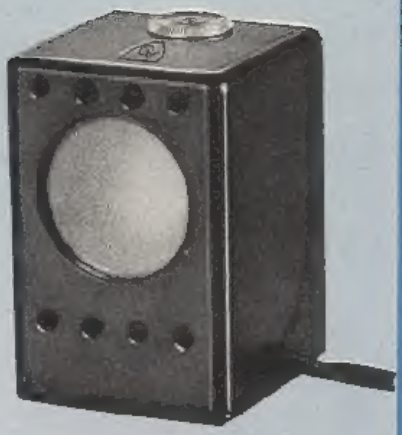
Add C just before the figures of the catalog number (as C15MLH, NC15MLH) to indicate Americoted optics. Prices for uncoated and Americoted models appear in right-hand columns.
Cabinets supplied with all microscopes. If not desired, deduct $15.00. If carrying case is preferred, add $5.00 to prices listed.

SPENCER MICROSCOPE LAMPS AND ACCESSORIES

No. 385 BAKELITE SUBSTAGE LAMP

Compact, adaptable to vertical or horizontal use—Sturdy, reagent-proof, practically indestructible—Standard 10-watt bulb.

385A With blue glass. **$4.00**
385B With Corning Daylite Glass..... **4.90**
386 Bulb, 10-watts.....MCP **.25**
388 Bulb, 15-watts.....MCP **.35**



Micrometer Eyepiece Fixed Scale

NO. 415
6X magnification, 5-mm scale divided into 50 parts **$15.00**

NO. 420
10X magnification, 5mm scale divided into 100 parts..... **$15.00**

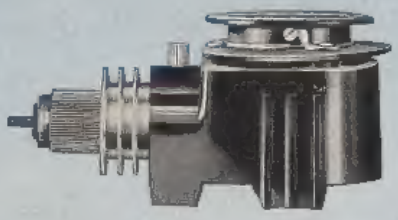
No. 353 UNIVERSAL MICROSCOPE LAMP

For transmitted or reflected light—Useful above or below stage—Mounted on 3-link jack-knife stand—Focusable from image of filament to diffused beam—With intensity control from 4.5 to 7.5 volts—With transformer. **$49.00**
360 Bulb ..... MCP **.70**

No. 370 ADJUSTABLE LABORATORY LAMP

For general microscopical or dark field work—Focusable, with size of field controlled by iris diaphragm—Adjustable as to angle and height—100-watt bulb.

370A With blue and ground glasses **$47.00**
370B With Corning Daylite Glass **50.00**
3403 Bulb .... MCP **.90**



No. 700 ATTACHABLE ILLUMINATOR

Convenient, permanently adjusted illumination for all objectives—Attachable to condenser **$11.80**
380 Bulb **1.40**

No. 735 MICROSCOPE ILLUMINATOR

For binocular microscopes, phase or dark field microscopy, photomicrography and microprojection—All adjustments externally located for convenience—Special double lamp house for cool operation—Iris diaphragm—100-watt bulb, 8' cord.

735A With simple filter holder and blue and ground glasses **$60.00**
735B With simple filter holder and Corning Daylite Glass..... **63.00**
735C With multiple filter holder and blue and ground glasses... ..... **65.00**
3403 Bulb ....MCP **.90**

No. 361 CHALET MICROSCOPE LAMP

Inexpensive—To illuminate binocular microscopes—Visor shades eyes—Standard 60-watt bulb... ..... **$13.00**
364 Bulb ..... MCP **.11**

SPENCER MEASURING AND COUNTING RETICULES—21.15mm diameter

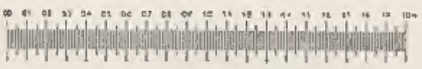
NO. 405
5mm scale divided into 50 parts..... ..... **$5.00**

NO. 422
5mm square ruled into 0.5mm squares, each mm line numbered on 2 adjacent sides..... **$9.00**

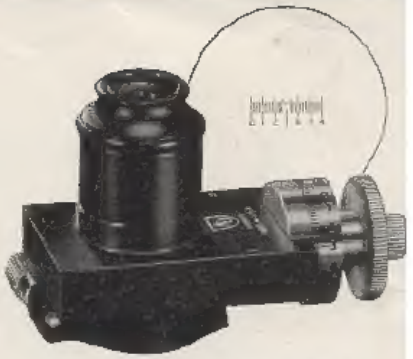
NO. 416
Each quarter of 7mm square divided into 25; one again into 25 ..... **$10.00**

NO. 427
Cross hair.. **$6.00**

SPENCER STAGE MICROMETER



NO. 400. Standard 1" x 3" slide with 2mm scale divided into 200 parts **$16.00**



NO. 425 SCREW MICROMETER EYEPIECE

Scale of 30 divisions, every fifth line of double length and numbered—Each interval in scale exactly equivalent to one revolution of drum graduated into 100 parts—Does not require traversing of index over entire object—Fraction of rotation is sufficient—10X magnification **$77.00**

SPENCER ACHROMATIC OBJECTIVES

Cat. No.	Type	Equiv. Focal Length	Initial Magnification	Numerical Aperture	Working Distance	Price
101	dry	48mm	2	0.08	52.5	**$11.00**
102	dry	40	3	0.08	35.2	**11.00**
104	dry	32	4.0	0.10	21.0	**12.00**
105	dry	30	3.5	0.09	25.4	**18.00**
106	dry	24	3.4	0.08	3.7	**18.00**
107	dry	25	5	0.14	16.7	**18.00**
109	dry	16	10.0	0.25	6.8	**18.00**
110*	dry	16, 32	10, 4.2	0.25, 0.10	6.8, 25	**18.00**
112	dry	8	20.0	0.50	1.3	**26.00**
115	dry	4	43	0.66	0.73	**29.00**
118	dry	4	43	0.85	0.18	**29.00**
122	dry	3	57	0.85	0.12	**36.00**
127	oil imm.	1.8	97	1.25	0.12	**52.00**
1202**	oil imm.	1.8	97	1.25	0.13	**72.00**

* Separable Objective ** With Built-in Iris Diaphragm

SPENCER EYEPIECES

Cat.No.	Type	Power	Price
	Single		
133	Huygenian	5X	**$ 5.50**
140	Huygenian	8X	**5.50**
142	Huygenian	10X	**5.50**
144	Huygenian	12X	**7.00**
143	Huygenian	16X	**9.00**
135	Wide Field	10X	**12.00**
137	Wide Field	15X	**12.00**
139	Wide Field	20X	**12.00**
	Paired		
1133	Huygenian	5X	**12.00**
1140	Huygenian	8X	**12.00**
1142	Huygenian	10X	**12.00**
1144	Huygenian	12X	**15.00**
1143	Huygenian	16X	**19.00**
1135	Wide Field	10X	**25.00**
1137	Wide Field	15X	**25.00**
1139	Wide Field	20X	**25.00**

MICROSCOPE BODY TUBES

Useful in industry for attaching to machinery—Have rack-and-pinion coarse adjustment—Accommodate standard optics.

71 With adjustable graduated draw tube. **$33.00**

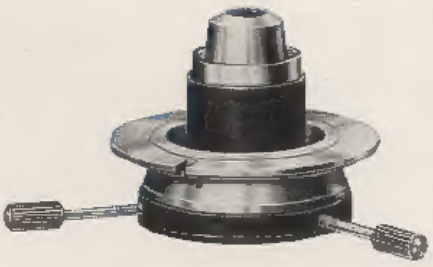
81 With fixed draw tube **28.00**

MIRROR AND FORK

192 Plano-concave mirror for microscopes of series 15, 35, 65, 75.. **$6.00**

193 Fork mount to adapt mirror to microscopes of series 15 and 35. **.80**

194 Fork mount to adapt mirror to microscopes of series 65 and 75. **1.80**



SPENCER DARK FIELD CONDENSER

Spencer Dark Field Condenser No. 214 is useful in examining the living *Treponema pallidum*, body fluids, colloidal suspensions, dispersibility of additives, and shape and size of sludge particles. Specimens which cannot be readily observed with bright field, are illuminated so that particles and organisms become self-luminous for easy observation against a dark background. No. 214 fits the fork-type substage mount of the latest Spencer microscopes, is interchangeable with bright field condensers, and has a centerable mount and funnel stop for oil immersion objective..... **$50.00**

ATTACHABLE MECHANICAL STAGES

NO. 1584

Spencer Ungraduated Attachable Mechanical Stage with "pinch grip" action. Conveniently located buttons actuate rack-and-pinion movements in both directions. Will permit exploration of 25 x 75mm slides. In case..... **$46.00**

NO. 1585

Spencer Graduated Attachable Mechanical Stage with "pinch grip" action. Conveniently located buttons actuate rack-and-pinion movements in both directions. Will permit exploration of 50 x 75mm slides. In case **$60.00**

SPENCER LABORATORY MICROSCOPES

American Optical Company

Scientific Instrument Division

Buffalo 15, New York

BRANCH OFFICES

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Columbus St. Louis Philadelphia Atlanta Pittsburgh Minneapolis

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